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# MULTIMEDIA UNIVERSITY

## FINAL EXAMINATION

TRIMESTER 2, 2016/2017

**TSI2241 SYSTEM INTEGRATION AND ARCHITECTURE**  
(All Sections / Groups)

2<sup>nd</sup> MARCH 2017  
9:00 a.m. – 11:00 a.m.  
(2 Hours)

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### INSTRUCTION TO STUDENTS

1. This paper consists of 4 pages with FIVE (5) questions only.
2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the answer booklet provided.

**QUESTION 1**

A. The Systems Development Life Cycle (SDLC) is a framework for describing the phases involved in developing and maintaining information systems. Typically system development projects can follow two models; *predictive models* or *adaptive models*.

- i. Identify a sample SDLC for each of the *predictive model* and the *adaptive model*.

(2 marks)

- ii. Illustrate a system development scenario that would be suitable to implement the *adaptive model* by justifying why it is more suitable for *adaptive model* and why it is not suitable for *predictive model*.

(4 marks)

B. The choice between developing versus purchasing software often is called *build or buy* decision. Compare the benefits of build or buy by listing TWO (2) reasons for in-house development and TWO (2) reasons for purchasing a software package.

(4 marks)

**QUESTION 2**

A. Organisational culture is a set of shared assumptions, values and behaviours that characterise the functioning of an organisation. Since organisational culture is very powerful, many believe the underlying causes of many companies' problems are not in the organisational structure or staff but are in the culture.

Identify any FOUR (4) characteristics of organisational culture.

(4 marks)

B. Many graphical tools are available to describe an information system. Data flow diagram (DFD) can be used to show how to transform input data into useful information.

Illustrate THREE (3) mistakes to avoid when drawing a DFD.

(6 marks)

**Continued...**

**QUESTION 3**

- A. The Swtor company currently has 2 projects that are required for the company to gain much needed competitive advantage over their rivals. The upper management of the company is split into two factions; one supporting project ABC, another supporting project XYZ. Swtor's director has tasked you to help clarify the issue.

**Project ABC**

Discount rate

12%

	Year				
	0	1	2	3	Total
Costs	22000	3400	3400	3400	
Discount factor					
Discounted costs					
Benefits	0	22000	18000	10000	
Discount factor					
Discounted benefits					
Discounted (benefits-costs)					
Cummulative (benefits-costs)					

**Project XYZ**

Discount rate

12%

	Year				
	0	1	2	3	Total
Costs	80,000	5,000	5,000	5,000	
Discount factor					
Discounted costs					
Benefits	-	65,000	55,000	40,000	
Discount factor					
Discounted benefits					
Discounted (benefits-costs)					
Cummulative (benefits-costs)					

- Complete the missing values for both tables.  
(5 marks)
- Evaluate the benefits for investing in project ABC and the benefits for investing in project XYZ.  
(2 marks)

**Continued...**

- B. Software project estimation can be a series of steps that provide estimates with acceptable risks. One method is to use relatively simple decomposition technique, like using *software size*.

Explain what approaches can be taken to determine *software size* and provide the equation to calculate *software size*.

(3 marks)

#### **QUESTION 4**

Miller states “the underlying motivation of program testing is to affirm software quality with methods that can be economically and effectively applied to both large scale and small scale systems.”

- A. Defend the testing principle “*To be most effective, testing should be conducted by an independent third party*”.

(2 marks)

- B. Comparing the *white box* and *black box* testing methods, explain the different aims of both testing methods.

(4 marks)

- C. Contrast *unit testing* with *integration testing* by defining them and stating their purpose.

(4 marks)

**Continued...**

**QUESTION 5**

- A. Based on the following description given below, design the appropriate UML diagram to show the states of a contracted project as it transitions from one state to another.

(6 marks)

*Newbie is a game development company that lends its talents to companies or individuals who would like to contract a game. Development of a game only begins when they are hired to create one. This will mark the start of the concept phase. In the concept phase, 2 requirements engineers are sent to the client's site. The engineers will then design the needed UML diagrams. Once the diagrams are completed, the project can enter the development phase. During this phase, the project plan is fleshed out and the budget cost is estimated. When the project plan and budget estimation is completed, the project will enter the implementation phase if the client has paid at least 20% of the cost. If the client has not paid the sufficient amount, the project will remain in the development phase. After the first stable version is created then it will move on to the close-out phase. While it is transitioning from implementation phase to close-out phase, the client must pay 75% of the project's total costs. Client will perform an acceptance test for the game. When all tests are accepted, then the project ends.*

- B. System integration requires personnel who possess sound technical and management skills that combine to provide the ability to integrate technology and operations with technical and managerial direction.

Explain FOUR (4) *functional activities* that a system integrator must be competent of.

(4 marks)

**End of Paper**